

GUIDELINES FOR SCABIES PREVENTION AND CONTROL

The following guidelines, revised April 2002, have been adapted and published by the Kentucky State Department for Public Health, Communicable Disease Branch, with the permission of the Missouri Bureau of Communicable Disease Control. The Missouri scabies publication, revised 6/15/00, may be viewed and downloaded from this website: <http://www.health.state.mo.us/Publications/CDManual/Cdsec38.pdf>.

Scabies Prevention Programs in Health Care Facilities Require That: 1

1. Health care workers be suspicious of scabies in persons with a rash or pruritus that has gradually gotten worse, particularly during the night time hours;
2. Health care facilities establish a policy of examining newly admitted persons for scabies and questioning new employees for either exposure to or symptoms of scabies;
3. The diagnostic skills of a consultant experienced in recognizing scabies be used in evaluating difficult or unusual cases;
4. In-house competence in preparing and examining skin scrapings from suspect persons is developed;
5. Protective clothing and gloves be used when providing hands-on care to persons suspected of having scabies;
6. A system, for recording epidemiologic and clinical information on suspect and confirmed persons, is established.

Equipment Needed for Skin Scrapings:

1. Gloves
2. Magnifying glass
3. Gooseneck lamp
4. Felt tip pen-green or blue washable ink
5. Alcohol swabs
6. #15 scalpel blades, glass slides for scraping, or curettes

7. Scalpel holder
8. Kelly clamp or other forceps
9. Slides and cover slips
10. Slides and cover slips
11. Requisitions, if slides are being sent to public health laboratory
12. Sharps container
13. Clear nail polish
14. Microscope

Procedures for Doing Skin Scrapings. 1,2

1. Establish and confirm the diagnosis by skin scrapings and microscopic identification of mites, eggs or scybala (fecal pellets). A nurse from the facility can be taught this procedure by a dermatologist, the consulting physician, or by a nurse or technician, who has had professional training in doing the procedure.
 - a. Mass treatment should not be initiated unless a definite diagnosis has been made in at least 1 of the symptomatic cases. 1
 - b. Scrape those persons with the most severe rash first. Elderly may present with severe urticaria and bullous lesions.
 - c. Shoulders, back and abdomen are choice areas for scrapings in the elderly. 2 Other sites: hands, wrists, elbows, feet, ankles, buttocks, axillae, knees, thighs and breasts.
 - d. Use hand magnifying lens to identify recent burrows or papules. A bright light and magnifying glass will assist in visualizing the tiny dark speck (the mite) at the end of the burrow.
 - e. Identify these high yield lesions by applying mineral oil (best used over dry scaly areas) or by applying the burrow ink test to possible burrows. The burrow ink test is done by using a wide felt tip pen (blue or green are best) over burrows and then wiping off with an alcohol swab. The alcohol will remove most surface ink, but will not remove the ink taken up by the burrow, thus leaving a dark irregular line.
 - f. Apply mineral oil or preferably microscope immersion oil to lesions or scalpel blade and glass slides. 2
 - g. Scrape non-excoriated, non-inflamed areas (burrows and papules) vigorously with a #15 scalpel blade or glass slide held at a 90° angle to the skin and while holding the skin taut until the stratum corneum is removed. 2,3,4 (Vigorous scraping appropriately results in a few red blood cells visible under the microscope, but there should not be frank bleeding.) Some practitioners prefer using a small curette. Change blades or curettes between scrapings on different persons. Blades can be placed and removed from the handle with a forceps. Used blades must be placed in a sharps container.
 - h. Transfer skin scrapings from 6 different sites to a single slide or to 6 different slides per patient. 2 These scrapings can be pushed onto the slide edge and then moved to the center of the slide.
 - i. Place the cover slip over the slide. 2

- j. Examine entire slide methodically under low power at 25-50 x magnification for at least 5 minutes. ¹ Low Power (2.5-4 x) is useful initially. The microscope should be taken to the facility; however, if the practitioner is not trained in reading the slides, the cover slip should be secured to the slide at all edges with clear nail polish and transported personally, by courier, or by mail (in a secure mailer) to:
 - 1.) a hospital or rural clinic laboratory with pre-arrangements; or
 - 2.) a physician's office with pre-arrangements.

Epidemiologic Variables for Scabies ^{1,2}

1. Make a line list* of room number, age, sex, symptoms, date of onset for:
 - a. **Symptomatic persons with positive scrapings;** differentiate between conventional and Norwegian (keratotic or crusted) scabies. ^{1,2,5} See Table 1 for Definitions of Scabies Infestations.
 - b. **Symptomatic persons with negative scrapings**
 - c. **Asymptomatic contacts** of a symptomatic case. These contacts should be on a totally separate line list. Close contacts are persons who have skin to skin contact, sleep in the same bed or handle infested clothes and bed linens. Contacts of crusted scabies should be designated High Risk, Low Risk and No Risk.
 - d. Contact tracing should go back 2 months.
2. Ascertain the epidemic level: proportion of affected persons (positive scrapings or symptomatic). ¹ This information will determine whether persons in the whole facility, or just one section, are treated.
 - a. Determine percentage of affected persons (patients or residents) within the entire facility's population of patients or residents.
 - b. Determine percentage of affected employees within the entire facility's employee population.
 - c. Determine percentage of affected persons within each subgroup of a population; i.e., nursing home wing, hospital department.
3. Look for similarities or groupings in age and sex among affected persons.¹
4. Ascertain type and frequency of secondary bacterial infections. ^{1,5}
5. Determine the mode of transmission; i.e., employees having close personal contact like bathing, bed making, applying skin lotions, frequent lifting/repositioning of patients. ^{1,2} **or** exchanging clothing, sleeping on same linens, playing games involving close hand or skin contact ^{1,2} **or** sexual contact. ^{1,2}

General Recommendations

1. Notify facilities to which potentially infested patients or employees have transferred. ^{1,8}
2. Intensive educational programs should be given to all employees. ¹ They should be given a Fact Sheet on Scabies.
3. Allocate sufficient personnel and funding to initiate and manage follow up treatments. Facility should purchase enough medication to treat symptomatic persons (patients/residents, employees, volunteers and family members) and their close contacts. ^{1,2}

Selective Treatment Protocol ¹

1. A conventional scabies treatment regimen can be selective when 1 person has a positive scraping (which is **not** indicative of Norwegian scabies), See Table 1 for Definitions of Scabies Infestations. Selective treatment protocol can be used. ¹
2. The diagnosed and probable infested **cases** and **symptomatic contacts** should receive treatment with subsequent monitoring for effectiveness of treatment. A skin scraping should be done on the symptomatic cases 1 month after treatment, ² particularly if rash and symptoms persist. See section on Application of Scabicides.
3. All “hands-on” **contacts** during preceding 2 months (employees, relatives and other patients) of this patient/resident and close personal **contacts** of the symptomatic employee should receive treatment. ^{1,2,9}

Mass Treatment Protocol ^{1,2,9}

1. A physician should be designated as the outbreak control officer and be given authority to manage the treatment regimen of all residents in a long term care facility. At the least, all attending physicians should agree to a cooperative schedule for conventional or Norwegian scabies. ⁹ See Table 1 for Definitions of Scabies Infestations.
2. Mass treatment should be administered within a 24-48 hour period to all persons (residing and working) in a defined area of the facility if: ^{2,9}
 - or more symptomatic patients/residents have positive scrapings and 1 or more employees on the same unit exhibit pruritus or have a positive scraping ²; **or**
 - 1 asymptomatic patient/resident has a positive scraping and many patients/residents have exhibited symptoms of infestation for months (2-10% rate of symptomatic infestation); **or**
 - Norwegian scabies is diagnosed in 1 patient/resident and at least 1 employee is symptomatic. ¹

3. Mass treatment of everyone in the facility (all residents, at risk employees and household members) should be administered within a few successive days if positive scrapings are found in 2 or more separate areas of the facility.
4. Employee crossover should not be allowed until the specified population has been treated.
5. Household members, sexual contacts and roommates of symptomatic employees should be treated the same day as the employees. ¹
6. Write a detailed schedule of:
 - a. Who will be treated and who will do the treating;
 - b. What will be used for treatment, including specific instructions on how to apply lotions;
 - c. Where treatments will be done; i.e., a treatment room, individual beds, at home;
 - d. When treatments will be done (date and time);
 - e. State when the person will be considered non-infested, can be removed from isolation and can return to work. See section on Isolation and Environmental Control for Conventional Scabies.
7. Write a second schedule for:
 - a. Reassessment of all treated persons at 14 days.
 - b. Persons needing a second treatment 3-7 days later. See subsections 8 and 9 under Application of Scabicides.
 - c. Persons with crusted or infected lesions needing routine daily monitoring, monthly scrapings for a few months or a maintenance monthly treatment regimen. ²
8. Notify all families and frequent visitors about problems and need for their cooperation. ^{1,2}

Application of Scabicides and Steroid Creams

1. Treatment failures may occur for several reasons, the most common being **inadequate application of scabicide**. ^{1,2,5,8,10} Other reasons for treatment failure include:
 - a. infected or crusted lesions. ⁹
 - 1) Keratolytic agents (20-40% urea and 6% salicylic acid) may be necessary to soften scabiness and permit penetration of scabicide. ^{2,5,11}
 - 2) Concomitant bacterial infection should be treated with appropriate antibiotics and retreated for scabies a week or 10 days later. ¹¹
 - b. reinfestation from untreated contacts. ¹⁰
 - c. cell-mediated immunodeficiency. ^{1,12}
 - d. resistance of mites to the scabicide. ^{8,13,14}

NOTE: Pruritus and rash can continue for 1-4 weeks after treatment. Pruritus and residual rash should not be considered treatment failure until 1 month after last treatment. To ameliorate these signs and symptoms, some dermatologists use 1% hydrocortisone cream or triamcinolone cream (0.1%-0.025%) applied to the most intense rash and a lubricating agent or emollient to the lesser rash for children, ^{15,16} 1% hydrocortisone cream or triamcinolone cream 0.1% can be used for adults as well. ¹⁵ Antihistamines are also used to alleviate the hypersensitivity response.

- e. Steroid creams should not be applied until after first scabicide treatment. Topical and systemic steroids cause depression of delayed hypersensitivity and pruritus, thus allowing scabies to go undetected and transmission unimpeded.
2. Gloves and gown are worn to apply scabicides.
3. Bathe as usual and change bed linens.
4. Apply scabicide to every square inch of skin, from the posterior ear folds down over entire body, including all non-infected areas. Include intergluteal cleft, navel, crevices of contractured extremities, and webs between fingers and toes. ¹¹ If scabicide is washed off during handwashing or perineal care, it must be reapplied.
5. In infants and young toddlers, the elderly and the immunocompromised, the head (face and scalp) requires application of scabicide. Pay close attention to the area behind the ears. Do not get the scabicide near the eyes or mouth. Prior treatment failure may be an indication to include the head in other persons. ^{2,11}
6. Fingernails and toenails should be clipped and scabicide applied under nails. A small soft brush is helpful for this. ^{2,17,18}
7. Scabicides
 - a. 5% permethrin cream (a synthetic pyrethroid) ¹⁹, i.e. Elimite, a trade name for this product, is still considered the drug of choice by several authorities including the 2000 American Academy of Pediatrics Red Book and The Medical Letter, April 2002 “On Drugs and Therapeutics.” Both references recommend alternative drugs, *ivermectin and 10% Crotamiton (Eurax); however, the Red Book still recommends the use of lindane (Kwell) as another alternative drug and The Medical Letter does not. (The identification of trade names does not imply endorsement by the Kentucky State Department for Public Health.)

(5% Permethrin cream)

Cure rate in one study was 91%. ^{10,14}

1 application is considered curative, although 2 applications are frequently recommended by experts for symptomatic persons.

The usual adult dose is 30 grams. A 60 gram tube should treat 2 adults. For adults, it should be

massaged into the skin covering the entire body (except the head) from the soles of the feet to the neck. For infants, young toddlers, and geriatric patients, it should be applied to the entire body including the scalp, neck, temples and forehead because the mite often infests these areas in those age groups. The patient should be instructed to remove the medication by thoroughly bathing 8-14 hours after application. Contact with the eyes and mouth should be avoided. If contact occurs, the eyes should be immediately flushed with water. Note: Studies have not demonstrated plasma levels. The drug is rapidly broken down and is excreted in urine as inactive metabolites. 6,19

Permethrin is safe for children 2 months of age and older. No instance of accidental ingestion has been reported. The most commonly reported side effects are pruritus, edema and erythema, which may continue for up to 2 weeks after treatment. Patients should be told that the itching or stinging of scabies infestation may continue after treatment, and should be advised to avoid repeated application of the scabicide.

Although animal studies showed no adverse effects to reproductive function or damage to the fetus, no adequate studies have been done on pregnant women. Therefore, permethrin should be used during pregnancy only when clearly necessary. If treatment is necessary for lactating mothers, breast-feeding should be discontinued during the treatment period.

- b. 10% crotamiton cream or lotion has an approximate 50% cure rate when applied less than 5 days, 10,20,22 60% effective for full treatment.
 - Cream must be thoroughly massaged into skin.
 - Apply twice a day for 5 days. 10
 - Avoid contact with eyes and mucous membranes.
 - Can be used on youngsters and elderly with dry sensitive skin, 5 but not denuded skin. 20

8. Conventional scabies regimen

- a. A single application of 5% permethrin cream is recommended in facilities provided that a professional health care worker who is knowledgeable about scabicide treatments supervises application of scabicide. Several authorities claim that a single adequate application of 5% permethrin cream is sufficient to eradicate conventional scabies, whether a diagnosed case, symptomatic case, or asymptomatic contact. 9,11 This has been effective in the clinical practice of treating individual families.
- b. Institutional scabies has a high propensity for transmission. If supervised application of scabicide by trained employees is not possible, the following regimen is recommended:

Persons who are positively diagnosed by skin scrapings-

3 treatments spaced 3-7 days apart, utilizing 2 different agents ²;
reevaluate at 14 and 28 days.

Symptomatic cases whose skin was not scraped or scraping was negative-

2 treatments, 3-7 days apart ^{2,5,11};
reevaluate at 14 and 28 days.

Asymptomatic contacts, including household and sexual contacts, or diagnosed or

Symptomatic cases-

1 treatment, evaluate in 14 days. ²

- c. It should be acknowledged that some clinicians prefer to treat symptomatic individuals with two applications on two consecutive days.
9. Norwegian scabies (atypical, crusted) regimen
 - a. Aggressive treatment over entire body. ¹ See subsections 1-6 under Application of Scabicides.
 - b. 5% permethrin cream for 1 day, followed by 10% crotamiton lotion for 5 days, followed by a second 5% permethrin cream for 1 day. ^{2,5,8}
 - c. Reassess on days 7 through 14 with follow-up scrapings in one month. ² If scrapings are positive or if symptoms unabated, treat again.
 - d. If treatment failure occurs several times, monthly maintenance treatments should be given for an extended period of time; (e.g., applications of 10% crotamiton lotion for 2 days each month. ^{2,8}
 - e. Protective gown and gloves are necessary until scrapings are negative on 3 separate occasions.
 - f. Categorize contacts by risk of mite transmission ¹
 - 1) High risk:
prolonged or recurrent hands-on contact before initiation of patient treatment,
2 treatments, 3-7 days apart.
 - 2) Low risk: persons having had indirect contact (touching patient's clothing or linens); a simple, brief period of direct skin to skin contact (obtaining a blood specimen, positioning a patient for radiography); or a patient who was cared for by an employee who also cared for the scabietic patient,
1 treatment
 - 3) No risk: persons having had neither direct nor indirect contact require **no treatment.**
10. Cleansing bath is taken when product is to be removed. Some experts do not believe it is necessary to bathe residents at designated times in order to remove scabicide. Estes and Estes suggest that an extended interval before bathing or repeated applications be considered to offset reinfestation. ⁶

11. Fresh clean linens and clothes are put on after the cleansing bath.

Isolation and Environmental Control for Conventional Scabies

1. Environmental reservoirs were considered to play little or no role in scabies transmission until late 1988. Since then, Arlian and colleagues have demonstrated that *S. scabiei* can remain alive for 3 days on stuffed chairs, sofas and tiled floors. He found that nymphs could survive 2-5 days at 25° C and 45-75% relative humidity. Outbreak reports implicate laundry and clothes as probable sources of transmission. ²³
2. Isolate affected patients/residents during the treatment period or for 24 hours after initiation of scabicide such as 5% permethrin cream; 24 hours after last application of other scabicides; restriction of contact with others-restrict to room or home. ⁵
3. Wear gown and gloves for skin to skin contact. Wash hands after removal of gloves. ¹
4. Bed linens, towels and clothes used by the affected persons within 72 hours prior to treatment should be placed in plastic bags inside the patient's room, handled by gloved and gowned laundry workers and laundered at 50° C (122° F). ^{1,23,24} Hot cycle of dryer should be used for at least 10-20 minutes. Nonwashable blankets and articles can be placed in a plastic bag for 7 days, dry cleaned or tumbled in a hot dryer for 20 minutes. ²⁶
5. All bed linens, towels and clothes should be changed daily.
6. Multiple-use walking belts, skin creams and ointments can serve as potential reservoirs for mites. Disinfect the walking belt and discard all creams, lotions or ointments used prior to effective treatment. ^{25,26}
7. Mattresses, upholstered furniture and carpeting should be vacuumed.
8. Routing disinfection procedures are adequate on a daily basis. ¹
9. Symptomatic employees should be allowed back to work the morning following overnight treatment with 5% permethrin cream ¹. Disposable gloves should be worn 2-3 days by symptomatic staff that must provide extensive hands-on care to their patients. ¹

Isolation and Environmental Control for Norwegian Scabies

(Measures remain in place until skin scrapings are negative on 3 consecutive occasions.)

1. Assign patient/resident to a private room. ¹
2. Restrict contact with visitors until treatment regimen completed and scrapings are negative for live mites. Alternatively, visitors must take the same precautions (wearing a gown and gloves) as employees. ^{1,2,27}

3. Cohort employees to care for this patient/resident only (no other direct care responsibilities) until effective treatment is completed. Other duties for these employees can include record keeping and filing. ¹
4. Wear gown and gloves to attend to patient needs, for housekeeping duties and handling of laundry. ²⁸
5. * Spray insect repellent (pyrethrins) to wrist (edge of glove and ribbing of sleeve area), arms and front of gown. Remove before leaving the room. Wash hands.
6. Upholstered furniture covered with cloth fabric should be removed from the room or replaced with furniture covered in plastic or vinyl. Mattresses must be covered with plastic or vinyl. ¹
7. The patient's room should be vacuumed daily with a vacuum cleaner designated for this room alone. ¹
8. Routine disinfection procedures should follow thorough vacuuming on a daily basis and upon discharge of the patient from the room.
9. Utilize any other appropriate protocols such as given in subsections 4-6 under Environmental Control for Conventional Scabies.

*Spraying has not been proven to control or prevent the spread of scabies. Kentucky State Health Department does not strongly recommend the use of sprays for this reason and because of unduly exposing residents to possible toxic levels of insecticides.

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Table 1. Definitions of Scabies Infestations

Conventional scabies: average 10-15 mites at any given time, although only 1-2 mites may be recovered in scrapings, (frequently none are observed); occurs in physically healthy persons. ^{1,2}

Severe scabies: Atypical crusted scabies; usually a total of 3-6 mites and 8-12 eggs observed on 5-7 slides; do not exhibit hyperkeratotic cutaneous response because of decreased cell mediated immunity; some lack pruritus; occurs in nursing home residents and elderly with coexistent chronic disease; moderate to high risk of transmission. ⁶

Norwegian scabies: Typical crusted or keratotic: thousands of mites at any given time; multiple live mites, eggs, and scybala (fecal pellets) observed on almost every slide; have hyperkeratotic skin; occurs in debilitated, immunosuppressed, advanced chronic disease and mentally handicapped. Risk of transmission is high from skin and fomite contact. (Exfoliating skin scales harbor enormous numbers of mites which are shed onto linens, furniture, and carpeting). ^{1,2,5,7}

Nodular scabies: pruritic nodules, apparently due to hypersensitivity persisting for weeks to a year or longer, despite scabicial therapy, but eventually clear spontaneously; may regress with use of corticosteroids; surgical excision sometimes indicated if patient concerned and intralesional corticosteroids ineffective. ⁵

Pseudoscabies: scrapings always negative; fostered by residual pruritus in effectively treated cases and by conversations between misinformed persons. ^{1,5}